

## PATENT APPLICATION

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: A8700

Lawrence SHAH, et al.

Appln. No.: 10/813,269

Group Art Unit: 2828

Confirmation No.: 5356

Examiner: Dung T. NGUYEN

Filed: March 31, 2004

For:

FEMTOSECOND LASER PROCESSING SYSTEM WITH PROCESS PARAMETERS

CONTROLS AND FEEDBACK

## <u>UNDER 37 C.F.R. §§ 1.97 and 1.98</u>

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56, Applicants hereby notify the U.S. Patent and Trademark Office of the documents which are listed on the attached PTO/SB/08 A & B (modified) form and/or listed herein and which the Examiner may deem material to patentability of the claims of the above-identified application.

One copy of each of the listed documents is submitted herewith, except for the following: U.S. patents and/or U.S. patent publications; and co-pending non-provisional U.S. applications filed after June 30, 2003.

The present Information Disclosure Statement is being filed: (1) No later than three months from the application's filing date; (2) Before the mailing date of the first Office Action on the merits (whichever is later); or (3) Before the mailing date of the first Office Action after

A8700

INFORMATION DISCLOSURE STATEMENT

U.S. Appln. No.: 10/813,269

filing a request for continued examination (RCE) under §1.114, and therefore, no Statement

under 37 C.F.R. § 1.97(e) or fee under 37 C.F.R. § 1.17(p) is required.

The submission of the listed documents is not intended as an admission that any such

document constitutes prior art against the claims of the present application. Applicants do not

waive any right to take any action that would be appropriate to antedate or otherwise remove any

listed document as a competent reference against the claims of the present application.

The USPTO is directed and authorized to charge all required fees, except for the Issue

Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any

overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

Registration No. 29,710

Richard C. Turner

SUGHRUE MION, PLLC

Telephone: (202) 293-7060

Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: September 8, 2005

2

Substitute for Form 1449 A & B/PTO

SEY 0 8 2005

## INFORMATION DISCLOSURE

(use as many sheets as necessary)

Sheet	1.	of	4

Complete if Known				
Application Number	10/813,269			
Confirmation Number	5356			
Filing Date	March 31, 2004			
First Named Inventor	Lawrence SHAH			
Art Unit	2828			
Examiner Name	Dung T. NGUYEN			
Attorney Docket Number	A8700			

U.S. PATENT DOCUMENTS						
Examiner Cite		Document Num		Publication Date		
Initials* No.1	Number	Kind Code <sup>2</sup> (if known)	MM-DD-YYYY	Name of Patentee or Applicant of Cited Document		
		US RE37,585	E	03/19/2002	Gerard Mourou	
		US 6,333,485	Bl	12/25/2001	Richard Alan Haight	
		US 6, 268,586	Bl	07/31/2001	Brent C. Stuart	
		US 5,720,894		02/24/1998	Joseph Neev	
		US 6,552,301	B2	04/22/2003	Peter R. Herman	
		US 6,574,250	B2	06/03/2003	Yunlong Sun	
		US 6,421,573	Bl	07/16/2002	James D. Kafka	
		US 6,285,002	B1	09/04/2001	Bryan Kok Ann Ngoi	
		US 2002/0023903		02/28//2002	Bryan Kok Ann Ngoi	
		US 6,341,009	B1	01/22/2002	John O'Connor	
		US 6,146,375		11/14/2000	Tibor Juhasz	
		US 2002/0193704	A1	12/19/2002	Peter Goldstein	
		US 6,414,320	B1	07/2/2002	Muriel Y. Ishikawa	
		US 5,978,538		11/2/1999	Kiyotaka Miura	
Ì		US 2002/0076655	Al	06/20/2002	Nicholas F. Borrelli	
		US 2003/0099452	Al	05/29/2003	Nicholas F. Borrelli	
	•	US 2003/0035640	Al	02/20/2003	Mark Dugan	
		US 6,573,026	B1	06/3/2003	Bruce G. Aitken	
		US 2003/0110810	A1	06/19/2003	Douglas Scott Dunn	
		US 6,392,683	B1	05/21/2002	Kenichi Hayashi	
		US 6,407,361	<u> </u>	06/18/2002	Mark S. Williams	

FOREIGN PATENT DOCUMENTS							
Examiner	xaminer Cite Foreign Patent Document			nent	Publication Date	Name of Patentee or	T
Initials*	No.1	Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)	MM-DD-YYYY	Applicant of Cited Document -	Translation <sup>6</sup>

Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	Translation <sup>6</sup>
		Tae Y. Choi, "Ultra-fast laser-induce processing of materials: fundamentals and applications in micromaching." SPIE Proceedings Vol 4637 (2002) pp. 204-211	
		Ihtesham H. Chowdhury, "Ultrafast pulse train micromaching," Spie Proceedings Vol 4978 (2003) pp. 138-146	
		Santiago Camacho-Lopez, "Single-pulse and 'pulsetrain-burst' (>100MHz) effects in ultrafast laser processing of metals, glasses, and bio-tissues" OSA CLEO 2003 in Baltimore, MD (May) Paper CFF2	

	i i	i i i
l n	l	
Examiner Signature	Date	Considered
<u> </u>		<del></del>

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kind Codes of USPTO Patent Documents at www.uspto.gov, MPEP 901.04 or in the comment box of this document. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to indicate here if English language Translation is attached.

Substitute for Form 1449 A & B/PTO

INFORMATION DISCLOSURE
STATEMENT BY APPLICAN FORMATION DISCLOSURE

(use as many sheets as necessary)

Application
Confirmat
Filing Dat
First Nam
Art Unit

Sheet

2

4

of

Complete if Known				
Application Number	10/813,269			
Confirmation Number	5356			
Filing Date	March 31, 2004			
First Named Inventor	Lawrence SHAH			
Art Unit	2828			
Examiner Name	Dung T. NGUYEN			
Attorney Docket Number	A8700			

	U.S. PATENT DOCUMENTS						
		Document N	umber				
Examiner Initials*	nitials* No.1 Number Cod		Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document		
		US 6,312,768		11/6/2001	Andrei Rode		
		US 6,372,103	B1	4/16/2002	Michael D. Perry		
		US					

	FOREIGN PATENT DOCUMENTS						
Examiner	iner Cite Foreign Patent Document			nent	Publication Date	Name of Patentee or	m 1 4 6
Initials*	No.1	Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)	MM-DD-YYYY	Applicant of Cited Document	Translation <sup>6</sup>

Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.				
Initials	110.	Craig W. Siders, "Burst-mode femtosecond abltion in Copper and Lexan" OSA CLEO 2003 in Baltimore, MD (May) paper CFF3				
		L. Sudrie, "Writing of permanent birefringement microlayers in bulk fused silica with femtosecond laser pulses" Optics Communications 171 (1999) 279-284				
		Roberto Osellame, "Femtosecond writing of active optical waveguides with astigmatically shaped beams" J. Opt. Soc. Am. B Vol. 20 No 7/ July 2003 p 1559-1567				
		John D. Mills, "Embedded anisotropic microreflectors by femtosecond-laser nanomachining" Applied Physics Letters Vol. 81, No. 2 July 2002, p196-198				
	-	A. Bado, "Manufacturing of High quality Integrated Optical Components by Laser Direct-Write (M103) ICALEO 2003 in Jacksonville, FL. Laser Microfabrication, LMF Section C p 18-26				
		L. Sudrie, "Study of damage in fused silica induced by ultra-shor IR laser pulses" Optics Communications 191 (2001) 333-339				
		P. G. Kazansky, "Self-organized form birefringence in glass irradiated by intense ultrashort light pulses" OSA CLEO 2003 in Baltimore, MD (May) paper CWI1				
		Henry Haefke, "Microtexturing of functional surfaces for improving their tribological performance" Proceeding of the International Tribology Conference, Nagasaki, 2000 p 217-221				
		H.K. Tonshoff, "Structuring silicon with femtosecond lasers," SPIE Proceedings Vol. 4274 (2001) p 88-97				
,		J.Bonse, "Femtosecond laser ablation of silicon-modification thresholds and morphology," Applied Physics A 74, 19-25, (2002)				
		Jurgen Reif, "Ripples revisited: non-classical morphology at the bottom of femtosecond laser ablation craters in transparent dielectrics," Applied Surface Science 197-198 (2002) 891-895				

	 	T
Examiner Signature	 Date Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kind Codes of USPTO Patent Documents at www.uspto.gov, MPEP 901.04 or in the comment box of this document. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to indicate here if English language Translation is attached.

Substitute for Form 1449 A & B/PTO

SEP O & 2005

INFORMATION DISCLOSURE

STATEMENT BY APPLICATION

(use as many sheets as necessary)

Sheet

Complete if Known				
Application Number	10/813,269			
Confirmation Number	5356			
Filing Date	March 31, 2004			
First Named Inventor	Lawrence SHAH			
Art Unit	2828			
Examiner Name	Dung T. NGUYEN			
Attorney Docket Number	A8700			

			_					
	U.S. PATENT DOCUMENTS							
Examiner Initials*	Cite No.1	Document Nu Number	Mber Kind Code <sup>2</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document			

			F	OREIGN PA	TENT DOCUM	ENTS	
Examiner Initials*	Cite	Foreign Patent Document		Publication Date	Name of Patentee or		
	No.1	Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)	MM-DD-YYYY	Applicant of Cited Document	Translation <sup>6</sup>

Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	Translation <sup>6</sup>
Tilitiais"	140.	Egidijus Vanagas, "Surface nanostructuring of borosilicate glass by femtosecond nJ energy pulses," Applied Physics Letters Vol.82, No. 17, 28 April 2003, p.2901-2903	
		R.S. Taylor, "Femtosecond Laser Fabricated Nanostructures in Silica Glass," OSA CLEO 2003 in Baltimore, MD (May). Paper CWA18	
-		R.S. Taylor, "Ultra-High Resolution Index of Refraction Profiles of Femtosecond Laser Modified Silica Structures," OSA CLEO 2003 in Baltimore, MD (May). Paper CWI3	
		David Ashkenasi, "Processing of multi-layer systems using femtosecond, picosecond, and nanosecond laser pulses at different wavelengths," SPIE Proceedings Vol. 4637 (2002) p169-179	
		Alexei K. Zaitsev, "New low temperature femto-second laser annealing method for TFT fabrication technology," OSA CLEO 2003 in Baltimore, MD (May). Paper CThM34	·
		Ian Jones, "Laser Welding of Plastics-Process Selection Software (601) ICALEO 2003 in Jacksonville, FL. Laser Materials Processing LMP Section A p 76-84	
		Ian Jones, "Laser Welding of Plastics-Process Selection Software (601) ICALEO 2003 in Jacksonville, FL. Laser Materials Processing LMP Section A p 76-84	
		Nicole M. Woosman, "A Study of the Effect of Weld Parameters on Strengths of Clearwelede Thermoplastics (602) ICALEO 2003 in Jacksonville, FL. Laser Materials Processing, LMP Section A p 85-93	
	, -	Kulik et al, Short and ultrashort laser pulses: an upcoming tool for processing optical and semiconductor materials, Proc. SPIE Int. Soc. Opt. Eng. 5339, 35 (2004)	
		Said et al, Manufacturing by laser direct-write of three-dimensional devices containing optical and microfluidic networks, Bado, Said, Dugan, Translume, Proc. SPIE Int. Soc. Opt. Eng. 5339, 194 (2004)	
		Ostendorf et al, Ablation of metals and semiconductors with ultrashort pulsed lasers: improving surface qualities of microcuts and grooves, Proc. SPIE Int. Soc. Opt. Eng. 5340, 153 (2004)	
		Watanabe et al, Fabrication of photonic devices with femtosecond laser pulses, Proc. SPIE Int. Soc. Opt. Eng. 5340, 119 (2004)	
		Femtosecond laser machining of integrated capillaries in microfludic devices, Tyson N. Kim Photonics West Poster Session 5340-31 Only, no paper submitted	

	<u> </u>	
Examiner Signature	Date Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kind Codes of USPTO Patent Documents at www.uspto.gov, MPEP 901.04 or follow the hyperlink from the title of the document to the intranet. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to indicate here if English language Translation is attached.

Substitute for Form 1449 A & B/PTO

INFORMATION DISCLOSURE

STATEMENT BY APPLICAN (use as many sheets as necessary)

of 4

4

Sheet

Complete if Known		
Application Number	10/813,269	
Confirmation Number	5356	
Filing Date	March 31, 2004	
First Named Inventor	Lawrence SHAH	
Art Unit	2828	
Examiner Name	Dung T. NGUYEN	
Attorney Docket Number	A8700	

	U.S. PATENT DOCUMENTS							
F	Cite No.1	Document Number		Publication Date				
Examiner Initials*		Number	Kind Code <sup>2</sup> (if known)	MM-DD-YYYY	Name of Patentee or Applicant of Cited Document			
		US						
		US						
		US						
		US						
		US						
		US						

	FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date	Name of Patentee or			
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)	MM-DD-YYYY	Applicant of Cited Document	Translation <sup>6</sup>		
				•					
-									
				<del> </del>					

NON PATENT LITERATURE DOCUMENTS						
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	Translation <sup>6</sup>			
		A. Ostendorf et al, "Abalation of metals and semiconductors with ulstrashort-pulsed lasers: improving surface qualities of microcuts and grooves", Proc., SPIE vol 5340 (2004) pp. 153-163				
	-	W. Watanabe et al, "Fabrication of photonic divices with femtosecond laser pulses", Proc SPIE, vol 5340 (2004) pp. 119-126				
		A. Said et al, "Manufacturing by laser direct-write of three-dimensional devices containing optical and microfluidic networks", Proc SPIE vol. 5339 (2004) pp. 194-204				
		C. Kulik, "Short and Ultrashor t Laser Pulses: An upcoming Tool for Processing Optical and Semiconductor Materials", Proc. SPIE vol. 5339 (2004) pp. 35-48				
			<u> </u>			

		,
Examiner Signature	Date Considered	

<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>&</sup>lt;sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kind Codes of USPTO Patent Documents at www.uspto.gov, MPEP 901.04 or follow the hyperlink from the title of the document to the intranet. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to indicate here if English language Translation is attached.